

WHAT IS CLAIMED:

1. A B-stageable adhesive comprising two chemical compositions, a first composition and a second composition, having curing temperatures or curing temperature ranges sufficiently separated to allow the composition with the lower curing temperature, the first composition, to cure without curing the composition with the higher curing temperature, the second composition.
2. The B-stageable adhesive according to claim 1 in which the curing temperatures of the first and second compositions are separated by 30°C or greater.
3. The B-stageable adhesive according to claim 1 in which the first and second compositions are cured independently by irradiation or heat.
4. The B-stageable adhesive according to claim 1 in which the first composition is selected from the group consisting of acrylic compounds or resins; cycloaliphatic epoxy compounds or resins, bismaleimide compounds or resins; and bismaleimide compounds or resins in combination with vinyl ether, vinyl silane, styrenic or cinnamyl compounds or resins.
5. The B-stageable adhesive according to claim 1 in which the second composition is an epoxy compound or resin.
6. The B-stageable adhesive according to claim 5 further comprising an imidazole/anhydride adduct.
7. The B-stageable adhesive according to claim 6 in which the imidazole/anhydride adduct is a complex of 1 part 1,2,4,5-benzenetetracarboxylic anhydride and 4 parts 2-phenyl-4-methylimidazole, or a complex of 1 part 1,2,4,5-benzenetetracarboxylic dianhydride and 2 parts 2-phenyl-4-methylimidazole.
8. A method of attaching a semiconductor chip to a substrate comprising:

depositing onto the substrate a B-stageable adhesive comprising two chemical compositions, a first composition and a second composition, having curing temperatures or curing temperature ranges sufficiently separated to allow the composition with the lower curing temperature, the first composition, to cure without curing the composition with the higher curing temperature, the second composition;

heating the substrate and adhesive to the curing temperature of the first composition to cure that composition;

contacting the adhesive with a semiconductor chip; and

heating the substrate, adhesive, and semiconductor chip to the curing temperature of the second composition to cure that composition.

9. An assembly comprising a substrate for a semiconductor chip or die and a B-stageable adhesive deposited on the substrate, the B-stageable adhesive comprising two chemical compositions, a first composition and a second composition, having curing temperatures or curing temperature ranges sufficiently separated to allow the composition with the lower curing temperature, the first composition, to cure without curing the composition with the higher curing temperature, and characterized in that the first composition has been fully cured and the second composition is uncured.